

CHAPTER 3. EXISTING CONDITIONS

One of the most important elements of any water resource project is properly defining the scope of problems to be solved and opportunities to be addressed by the SRWRS. This process also includes defining existing and future resource conditions in the study area. The magnitude of change between existing and future conditions not only influences the scope of the problems and needs, but also the extent of related resources that could be influenced by any potential actions. This chapter provides a concise description of existing conditions and **Chapter 4** would identify problems and opportunities that can be addressed by a Sacramento River diversion. **Figure 3-1** shows referenced major rivers, areas, and facilities, and **Table 3-1** provides a summary of major reservoirs shown in the figure.

Table 3-1. Major Reservoirs Within the Study Area and Vicinity

Reservoir (Dam)	River	Owner ^[1]	Capacity (AF)	DOB ^[2]	Purposes (Uses of Water)
Black Butte	Stony Creek	USACE	143,700	1963	Flood Management, Storage (Irrigation, Recreation)
Folsom	American	Reclamation	975,000	1956	Multipurpose (Hydropower, Irrigation, Recreation)
French Meadows (L.L. Anderson)	Middle Fork American	PCWA	111,300	1965	Diversion, Storage (Domestic, Irrigation, Municipal, Recreation)
Hell Hole	Rubicon	PCWA	208,400	1966	Diversion, Storage (Domestic, Hydropower, Irrigation, Recreation)
Lake Almanor (Canyon)	North Fork Feather	PG&E	1,308,000	1927	Diversion, Storage (Hydropower, Irrigation)
New Bullards Bar	North Yuba	YCWA	969,600	1970	Multipurpose (Domestic, Hydropower, Irrigation, Municipal, Recreation, Flood Management)
Oroville	Feather	DWR	3,537,600	1968	Multipurpose (Hydropower, Irrigation, Municipal, Recreation, Flood Management)
Shasta	Sacramento	Reclamation	4,552,000	1945	Multipurpose (Irrigation, Hydropower, Municipal, Recreation, Flood Management)
Union Valley	Silver Creek	SMUD	230,000	1963	Storage (Hydropower, Recreation)
Whiskeytown	Clear Creek	Reclamation	241,100	1963	Multipurpose (Hydropower, Irrigation, Municipal)

^[1] Reservoir Owners:
DWR California Department of Water Resources
PCWA Placer County Water Agency
PG&E Pacific Gas and Electric Company
Reclamation Bureau of Reclamation
SMUD Sacramento Municipal Utility District
USACE U.S. Army Corps of Engineers
YCWA Yuba County Water Agency

^[2] DOB: Completion date of dam and beginning of operation.

SACRAMENTO RIVER SYSTEM

The Sacramento River, which is controlled by Shasta Dam, is the largest river system in California. Major tributaries to the Sacramento River include the American and Feather rivers. These three rivers provide many recreational, agricultural, and environmental resources within Sutter, Placer, and Sacramento counties.

Flow Conditions

After Shasta Dam was built in 1943, the annual average of Sacramento River flow at Verona (upstream of the confluence with the American River) is about 14.3 million AF/year, of which 44 percent is from the Feather River watershed. The Sacramento River is the major water source for the CVP with major storages within the upper basin including Shasta Reservoir (4,552,000 AF), Whiskeytown Lake⁷ (241,100 AF) and Black Butte Reservoir (143,700 AF).



Shasta Dam and Lake

The Feather River, with a drainage area of 5,921 square miles, is the largest tributary of the Sacramento River below Shasta Dam. The Feather River flows into the Sacramento River near Verona. Since the construction of Lake Oroville in 1967, the Feather River has contributed on average 6.4 million AF per year to the Sacramento River. Two major tributaries of the Feather River are the Yuba River and the Bear River, contributing about 30 percent of Feather River flow on average.

The largest storage facility in the Feather River watershed is Lake Oroville with a capacity of 3,537,600 AF. The reservoir is owned and operated by the California Department of Water Resources (DWR). Other major reservoirs include New Bullards Bar Reservoir on the North Yuba River (969,600 AF, owned and operated by Yuba County Water Agency (YCWA)), and Lake Almanor on the North Fork Feather River (1,308,000 AF, owned and operated by Pacific Gas and Electric Company (PG&E)). Through PG&E's Drum-Spaulding Project, PCWA receives water diverted from the Yuba River and the Bear River. Reclamation does not own or operate any major water supply facilities in the Feather River watershed.

The American River is another major tributary to the Sacramento River. The American River basin covers about 1,936 square miles and ranges in elevation from 23 feet to more than 10,000 feet. The average annual flow of the American River at Fair Oaks has been approximately 2.77 million AF per year since the Folsom Dam was constructed in 1956. It contributes about 15 percent of the total Sacramento River flow below the confluence at Sacramento. The largest reservoir in the basin, Folsom Reservoir (975,000 AF), is owned and operated by Reclamation for the CVP. Other major reservoirs include the Union Valley Reservoir on Silver Creek (230,000 AF, owned and operated by Sacramento Municipal Utility District (SMUD)), and PCWA's Hell Hole Reservoir on the Rubicon River (208,400 AF) and French Meadows Reservoir on the Middle Fork American River (111,300 AF).

Below the confluence with the American River at Sacramento, the Sacramento River continues to flow down to the Delta, where it merges with the San Joaquin River, and then through San Francisco Bay to the Pacific Ocean. Delta inflows from the Sacramento River, including additional CVP and SWP releases under the WQCP, are about 62 percent of the total inflow. Both the CVP and SWP export water to the San Joaquin Valley and southern California through the Tracy and Banks pumping plants located in the south Delta.

⁷ Whiskeytown Lake is a multipurpose reservoir that regulates flow from the Trinity River Basin.



Figure 3-1. Study Area and Vicinity Map

Water Quality

Surface water quality is a function of the mass balance of water quality from tributary streams, diversions, agricultural return flows, subsurface drainage flows, permitted discharges from M&I sources, and urban runoff. In general, the quality of water in the American River is high from the river's headwaters to its confluence with the Sacramento River. However, Feather River water quality generally degrades as the water moves downstream from Lake Oroville to its confluence with the Sacramento River. Conditions generally degrade downstream as a result of agricultural drainage, particularly from the Sutter Bypass.

The Sacramento River, below Shasta Lake to its confluence with the American River, experiences variable water quality conditions largely influenced by flow conditions, temperature, agricultural runoff, and mine drainage from the Iron Mountain area. From the confluence with the American River to the Delta, water quality varies due to urban runoff, the amount of flow from the American River, and agricultural runoff.

Fisheries

More than 30 species of fish are known to use the Central Valley portion of the Sacramento River, which extends from Keswick Dam to the Delta. The upper section of the Sacramento River, between Keswick Dam and Princeton, is of primary importance to native anadromous species, and is presently used for spawning and early lifestage rearing, to some degree, by steelhead, green sturgeon, and all four runs of chinook salmon (i.e., fall, late-fall, winter, and spring runs). Consequently, various lifestages of steelhead, green sturgeon, and all four runs of chinook salmon can be found in the upper Sacramento River throughout the year.

The lower portion of the Sacramento River extends from Princeton to the Delta, and includes the confluences of both the Feather and American rivers. The lower Sacramento River is predominantly channelized, leveed, and bordered by agricultural lands. Aquatic habitat in the lower Sacramento River is characterized primarily by slow-water glides and pools, is depositional in nature, and has reduced water clarity and habitat diversity, relative to the upper Sacramento River. This section of the river provides no spawning habitat for salmonids, but serves as a migratory corridor for (1) fish that spawn in the upper Sacramento River and its tributaries; (2) anadromous fish that spawn in the Feather River and American River basins; and (3) fish emigrating to the Delta. Striped bass and American shad, two nonnative anadromous species, spawn in the lower Sacramento River. Other special status species that occur in the Sacramento River include Sacramento splittail, Delta smelt, and hardhead.

The Feather River and its tributaries are spawning grounds for several special status anadromous species, including fall-run and spring-run chinook salmon, steelhead trout, Sacramento splittail and green sturgeon. Striped bass and American shad, two nonnative anadromous species, also spawn in the Feather River. Fall- and spring-run chinook salmon, steelhead, and shad also spawn in the Yuba River, a major tributary of the Feather.

Folsom Lake and Lake Natoma on the American River support a great diversity of fish species, many of which were introduced. Strong thermal stratification occurs within Folsom Reservoir annually between April and November. Thermal stratification establishes a warm surface water layer and a deeper coldwater layer near the bottom of the reservoir. As a result, the reservoir supports both warmwater and coldwater fisheries. Coldwater releases from the lower elevations in Folsom Reservoir sustain coldwater fisheries in Lake Natoma and help maintain water temperature in the lower American River.



Folsom Dam and Lake

The lower American River below Nimbus Dam is used by over 43 species of fish, including numerous resident native and introduced species, and several anadromous species such as fall-run chinook salmon, steelhead, Sacramento splittail, striped bass, and American shad. This stretch of the river extends 23 miles. The lower American River provides several types of aquatic habitat, including shallow, fast-water riffles, glides, runs, pools, and off-channel backwater habitats.

Seasonal releases from Folsom Reservoir's coldwater pool provide thermal conditions in the lower American River that support annual in-river production of both anadromous salmonid species. Folsom Reservoir's annual coldwater pool volume is not sufficiently large to facilitate coldwater releases during July through September to provide maximum thermal benefits to juvenile steelhead rearing in the lower American River over the summer, and coldwater releases during October and November to benefit fall-run chinook salmon immigration, spawning, and incubation. Consequently, optimal management of the reservoir's coldwater pool on an annual basis is essential to provide the most favorable thermal benefits to both steelhead and fall-run chinook salmon, within the constraints of annual coldwater pool availability.

The Delta and San Francisco Bay together comprise the largest estuary on the West Coast. Over 120 fish species inhabit this estuary during at least a portion of their life cycles. The Delta species include many anadromous species, as well as freshwater, brackish water, and saltwater species. Special status species of the Delta include all four chinook salmon runs, steelhead trout, sturgeon, Delta smelt, Sacramento splittail, and longfin smelt. Other species of primary management concern include American shad and striped bass. The Delta is a primary habitat for striped bass, Sacramento splittail, sturgeon, Delta smelt, and longfin smelt.

Vegetation and Wildlife

The vegetation of the Sacramento River system supports a diversity of terrestrial wildlife species and reflects the Great Valley and Sierra Nevada foothill bioregions of California. Plant community composition within these regions includes riparian, grassland, oak woodland, chaparral, conifer forest, and emergent wetland vegetation types. These terrestrial habitats provide seasonal and year round habitat for many species of native and introduced wildlife. The following description provides an overview of the vegetation and wildlife associated with the Sacramento River, its two major tributaries (the American and Feather rivers), and the Natomas Cross Canal.



Fish weir at Nimbus Fish Hatchery

The Sacramento River supports some riparian vegetation; however, it is limited to narrow bands between the river and the riverside of the levee. The riparian vegetation on the Sacramento River is not as diverse as on the American River. The Sacramento River riparian community consists of valley oak, cottonwood, wild grape, box elder, elderberry, and willow. The shores of the lower Sacramento River are characterized by agricultural use.

Vegetation in the Feather River watershed is diverse, ranging from mixed conifer and deciduous forest to sparse ponderosa pine plant communities. Long-term vegetation disturbance and consequent gully erosion have led to dramatic changes in hydrology of the Feather River and its tributaries, resulting in reduced summer flow, higher summer water temperature, lower water tables, reduced meadow storage capacity, and a trend from perennial to intermittent flow. Many down cut streams no longer sustain late-season flow, causing adverse consequences to riparian and upland vegetation, aquatic communities, and downstream water users.

The Natomas Cross Canal joins the Sacramento River downstream from the mouth of the Feather River and upstream from the American River. This channel supports a dense riparian association of black willow,

shining willow, and cottonwood. Riparian cover within the channel provides nesting, thermal, and escape covers for local wildlife populations within the American Basin. The channel also serves as a wildlife movement corridor for wildlife accessing the Sacramento River.

Numerous species existing throughout Sacramento County are State or federally listed as threatened or endangered or are candidates for listing under the Federal Endangered Species Act (ESA). Sensitive plant species potentially occurring in the area include Northern California black walnut, Sanford's arrowhead, Sacramento Orcutt grass, and Colusa grass. Sensitive wildlife species include Swainson's hawk, valley elderberry longhorn beetle, bank swallow, and giant garter snake. In addition, Sacramento County contains numerous vernal pools, some of which may be inhabited by the federally listed vernal pool tadpole shrimp and the vernal pool fairy shrimp, and several sensitive plant species.

Throughout these regions, native species have declined due to the introduction of invasive non-native species of plant and wildlife. Native riparian vegetation has been replaced with introduced tamarix, giant reed, and tree-of-heaven. Populations of non-native species, including red fox, bullfrog, and brown-headed cowbird, have reduced native wildlife populations.

Land Use/Recreation

Sacramento County includes extensive areas of both urban and agricultural uses. The Sacramento metropolitan area is one of the fastest growing urban regions in California. The county's 1990 population is nearly 4 times that of the 1950 population and 97 percent of the population in the SRWRS study area is considered urban. The City of Sacramento's statewide role, the presence of excellent outdoor recreation opportunities, and the availability of land have contributed to this growth and are likely to continue to be a draw for future urbanization. The southern and southeastern portions of Sacramento County are dominated by a variety of agricultural uses, including croplands, along with rural residential land use.

Placer County also has experienced significant growth since 1950. The southern portion of the county has become increasingly urbanized with the influx of industry and new residential development into the Roseville-Rocklin area in the 1980s. Roseville, the largest city in this part of the county, grew 5-fold in the past 40-year period. Continuation of urban growth in the county is accounted for in local General Plans.

Sutter County, which has also experienced consistent growth, has not grown as fast as Sacramento and Placer counties. The southwestern corner of Sutter County is dominated by agricultural use, mainly tree and field crops (rice in particular). The area is sparsely populated (20- to 80-acre parcel minimums) and has no incorporated or urban areas.

The American River, Folsom Lake, Lake Natomas, Sacramento River, and Feather River provide extensive water-related recreation opportunities. The North, Middle, and South forks of the American River are heavily used for whitewater rafting. Downstream, the 18,000-acre Folsom Lake and recreation area offers opportunities for fishing, hiking, biking, swimming, running, camping, picnicking, horseback riding, water skiing, and boating.



Riparian zone along the Feather River



Beach area at Beals Point in Folsom Lake State Recreation Area

Folsom Lake is entirely within Folsom Lake State Recreation Area (SRA), administered by the California Department of Parks and Recreation. Folsom Lake SRA is one of the most popular recreation areas in the state, and its annual visitations average nearly 2.6 million. The predominant recreational uses are water-related, such as boating and water skiing. Downstream of Folsom Dam, Lake Natoma, the Folsom Dam afterbay, is also a unit of Folsom Lake SRA. Developed recreation facilities include picnic areas, bicycle and pedestrian trails, boat launch ramps, and campgrounds. On average, the lake supports about 500,000 visitor use days per year; the predominant recreational activity is trail use.

The lower American River, from Nimbus Dam to its confluence with the Sacramento River, is designated a “recreational river” by both the federal and State governments under the National and State Wild and Scenic Rivers Acts, respectively. Under the National Wild and Scenic Rivers Act (PL 90-542, 16 USC 1271 *et seq.*), federally assisted projects affecting the lower American River are subject to the Secretary of Interior’s determination that the projects “will not ... unreasonably diminish” the river’s recreational value. The State Act restricts construction of diversions unless the Secretary of the Resources Agency determines that construction is needed to supply domestic water to residents of the county and will not adversely affect the natural character of the river.

In addition, approximately 29 miles of the lower American River from Folsom Dam to the confluence with the Sacramento River are included in the American River Parkway Plan, an element of the Sacramento County General Plan. The American River Parkway (Parkway) consists of 14 interconnected parks and a continuous trail system, consisting of approximately 5,000 acres. According to the County of Sacramento, more than 5 million visitors per year use the Parkway and the Parkway’s Jedediah Smith Memorial Trail.

There are many recreation opportunities on the Sacramento River from its confluence with the Feather River downstream to Courtland, including boating, fishing, canoeing, rafting, swimming, and picnicking. Fishing is one of the biggest uses of the Sacramento River. Several boat launching and regional park facilities are located along the Sacramento River. The Sacramento River from the Feather River to Cache Slough Junction, a few miles upstream from Rio Vista, is one of the more popular sections for boating. The several-thousand-acre Stone Lakes National Wildlife Refuge is located within this southern portion of Sacramento County, east of the Sacramento River and provides hiking and wildlife viewing opportunities.

The Feather River supports extensive water-related recreation activities at Feather River Canyon, upstream and northeast from the river’s confluence with the Sacramento River. There are several marinas, boat ramps, and river parks near the confluence of the Feather and Sacramento rivers.

Aesthetics

The lower American River has been designated a “Recreational River” in the National and State Wild and Scenic Rivers systems and is considered to exhibit high scenic quality. Visual characteristics of the lower American River consist of steep bluffs, terraces, islands, backwater areas, and riparian vegetation. The lower American River is divided into three visual components. The upper river visual component extends from Nimbus Dam downstream to the Gristmill Dam Recreation area and consists of steep bluffs, terraces, riparian vegetation, and shallow water areas and is considered the most visually sensitive area along the river. The middle visual component is not considered as diverse as the upper river and consists of moderately sloped embankments, riparian vegetation, and shallow water areas. The lower visual component is considered the least visually sensitive and is primarily gravel banks, riffles, and ponds.



American River downstream of the Nimbus Fish Hatchery

The Sacramento River segment with the richest visual variety extends from Keswick Dam downstream to Red Bluff. The segment below that, extending from Red Bluff to the confluence with the lower American River, is largely confined by levees and rock revetment bank protection. The latter segment has less visual variety and is considered less pristine in appearance than the upper section of the river. The lower Sacramento River, extending from its confluence with the lower American River downstream to the Delta, is not considered visually sensitive as it is now leveed and bordered by agricultural land.

The Feather River segment near the confluence with the Sacramento River is located in an agricultural area in Sutter County. The terrain is generally flat, with little variation. The river channel is wide and contains turbid, slow-moving water. The river is visible from the Garden Highway, which is not heavily used, and views of the river are limited because of the surrounding flat topography.

The visual character of the Sacramento River south of Verona is typified by large expanses of flat agricultural lands divided by vegetated waterways and developed uses. Visual perceptions of the area are most easily characterized according to the viewer's location: views from the river, and views from the levee areas. Vistas from the river and from riverside residences are primarily short-range, due to the higher elevation of the adjacent levees. Foreground views from the water consist of levees, riparian vegetation, and occasional riverside residences and docks. From the levee adjoining the river, the surrounding area appears vast and open. Foreground views from the levee generally consist of roadside vegetation, orchards, and cultivated fields. In the middle ground and background, views of roadways, agricultural lands, and developed uses tend to blend, due to the area's overall flatness. The Sierra Nevada and the Coast Range are visible to the east and west, respectively, on occasional clear days.

Cultural Resources

Cultural resources include physical resources and intangible cultural values pertaining to paleontology, prehistoric and historic archaeology, history, and Native American ethnography. Paleontological resources include fossil animals and plants of scientific value. Archaeological resources include evidence of past human activities, both prehistoric and historic. Historic resources also include extant structures. Ethnographic resources may include natural or cultural resources, landscapes, or natural environmental features that are linked by a community or group of communities to the traditional practices, values, beliefs, history, and/or ethnic identity of that community or wider social group.

Several dozen prehistoric sites have been identified along the lower American, North Fork American, and lower Sacramento rivers. These include village sites, bedrock milling stations, lithic scatters, and small campsites. More than a hundred prehistoric sites have been identified within the Folsom Reservoir basin. Of particular concern are sites located within reservoir inundation areas. Such sites are subject to degradation due to reservoir siltation, erosion from fluctuating surface water elevations, and vandalism when exposed by low surface water elevations.

Historic sites along the lower American River, North Fork American River, and lower Sacramento River include placer mining districts, railroad-related structures, irrigation and hydroelectric facilities, and historic residential structures. Ethnographic resources include historic Nisenan (southern Maidu) village sites located along the lower Sacramento, lower American, and North Fork American rivers. Many archaeological sites in the area contain burials, and human remains are of substantial concern to contemporary American Indian people. Several federally recognized tribes are located within the SRWRS area. These include the United Auburn Indian Community of the Auburn Rancheria in Placer County and the Shingle Springs Band of Miwok Indians in El Dorado County. There are no federally recognized tribes in Sacramento or Sutter counties. However, the State recognizes several other local groups of Native Americans.

Soils and Geology

Sacramento Valley soils are alluvial in nature found in deep alluvial fans and floodplains. These soils are highly valued for irrigated crops. Soils found along the edges of the Central Valley include brown neutral and red iron pan soils. Soils within Sacramento County have been significantly influenced by human activities for uses such as cultivation and urban development. Historically, gold dredging, hydraulic mining, drainage system development, creation of levees, and cut and fill have all contributed to modifying the original soils. Geologic formations underlying the foothills portion of the plan area consist of complex folded and faulted, metamorphosed volcanic and sedimentary rocks, and has been eroded to a landscape of moderate relief and thin soils.

WATER SUPPLY CONDITIONS

Statewide Water Supply Projects

The regional water supply in California is facilitated mainly through the operations of the CVP and SWP to meet in-basin needs and provide exports for areas south of the Delta. In addition to water supplies provided by the CVP and SWP, groundwater resources within the Sacramento Valley and San Joaquin Valley also provide significant water supplies to local agricultural and M&I water users. Numerous local and regional projects also provide surface water, groundwater, and other supplies. To consistent with ongoing statewide water supply and CALFED ROD implementation, water supply and demand conditions in 2001 are used as existing conditions.

Central Valley Project

The CVP is a multipurpose project operated by Reclamation that stores and transfers water from the Sacramento River, San Joaquin River, and Trinity River basins to the Sacramento, San Joaquin, and Santa Clara valleys. The CVP was authorized by Congress in 1937, and operates as an integrated system to serve water supply, hydropower generation, flood control, navigation, fish and wildlife, recreation, and water quality control purposes.

The CVP service area extends about 430 miles through much of California's Central Valley, from Trinity and Shasta reservoirs in the north to Bakersfield in the south. The CVP also includes the San Felipe Unit, which delivers water to the Santa Clara Valley. In 2001, CVP deliveries totaled about 5.7 million AF, or about 80 percent of its total contracted deliveries of 7.1 million AF.⁸ These deliveries included approximately 2.9 million AF to the Sacramento River Service Area, 192,000 AF to the American River Service Area, and 2.6 million AF to the Delta Export Service Area.

State Water Project

The SWP is a multipurpose project operated by DWR. Thirty agencies throughout California have contracted with the SWP for an annual total of 4.2 million AF of water. Existing SWP facilities can supply less than 2.4 million AF during drought conditions. Additional facilities are planned to increase supply. Since 1962, the SWP has delivered water from Lake Oroville in the Feather River watershed through the Delta to the San Francisco Bay area, the San Joaquin Valley, portion of coastal areas, and southern California.

⁸ 2001 CVP delivery data from E-mail communication with Reclamation (January 2003).

In 2001, SWP deliveries totaled approximately 1.6 million AF, or about 39 percent of its total contracted deliveries of 4.1 million AF.⁹ These deliveries included 31,900 AF to contractors north of the Delta (e.g., Feather River and North Bay) and 1.6 million AF to contractors south of the Delta (e.g., South Bay contractors, San Joaquin Valley, Central Coastal, and Southern California).

Water Supply in the Study Area

Water supply in SRWRS study area is mainly from surface water diversions from the American and Sacramento rivers and groundwater extraction although water supply is also imported from other river basins through the Drum-Spaulding System, owned and operated by the Pacific Gas and Electric (PG&E).

Surface Water

Table 3-2 summarizes the service areas within the study area by surface water diversion points on the American and Sacramento rivers. The current maximum of water rights/contract entitlements and existing surface water diversions of SRWRS cost-sharing partners are summarized in **Table 3-3**. Detailed information on water rights/contract entitlements and projected demands are presented in **Appendix A: Assessment for Water Supply Needs**. WFA limits future diversions from the American River for cost-sharing partners with certain assumptions (see **Chapter 4** for details).

Table 3-2. Existing Authorized Diversions and Service Areas within the Study Area

Authorized Diversion Point	Service Area
Sacramento River	
Near Sacramento International Airport	Natomas Mutual Water Company
Near Discovery Park	City of Sacramento
American River	
Auburn Dam Site	Placer County Water Agency (MFP water rights)
Folsom Reservoir	City of Folsom
	City of Roseville
	El Dorado Irrigation District
	Folsom Prison
	Placer County Water Agency (MFP water rights and CVP entitlement)
	Sacramento Suburban Water District
	San Juan Water District (SJWD, including Citrus Heights Water District, Orange Vale Water Company, Fair Oaks Water District, City of Folsom)
Folsom South Canal	Arden Cordova Water Service Company
	Clay Water District
	Galt Water District
	Mather Air Force Base
	Omochumne-Hartnell Water District
	Sacramento County Water Agency
	Sacramento Municipal Utilities District
Near Landis Avenue and Ancil Hoffman Park	Carmichael Water District
Near Arden Bar	Sacramento Suburban Water District
Above H Street Bridge	City of Sacramento

⁹ 2001 SWP delivery data from DWR Web site (www.swpao.water.ca.gov/water.html), Notice to Contractors Number 01-15.

Table 3-3. Existing Water Rights/Contract Entitlements by SRWRS Cost-Sharing Partner

Water Purveyor	Surface Water Sources	Water Rights/ Contract Entitlements ^[1] (AF per year)	Amount Contracted to Other Water Purveyors ^[1] (AF per year)	Existing Diversion by Water Purveyor ^[2] (AF per year)
PCWA	MFP water rights	120,000	84,000 ^[3]	13,000
	PG&E water supply contract	100,400		100,400
	CVP entitlement	35,000		0
SSWD	PCWA water sale agreement	29,000		15,300
	Sacramento water delivery agreement	26,064		0
Roseville	PCWA water sale agreement	30,000		35,600
	SJWD water transfer agreement	4,000		
	CVP entitlement	32,000		
Sacramento	Water rights (American River)	245,000	28,644 ^[4]	124,900
	Water rights (Sacramento River)	81,800		

^[1] See **Appendix A** for more detailed information.

^[2] Preliminary data provided by cost-sharing partners for 2001 and 2002; the amounts are subject to revision; the amount of diversion does not include diversions of other purveyors based on water sale contracts and/or water delivery agreements.

^[3] PCWA has water sale contracts with SJWD (up to 25,000 AF), Roseville (up to 30,000 AF), and SSWD (up to 29,000 AF).

^[4] Sacramento has a 1964 agreement with SSWD (former Arcade Water District) for up to 26,064 AF of raw water delivery, and a water sale contract with Cal-American (up to 2,580 AF).

Groundwater Resources

The extent of the groundwater basin associated with the study area includes the northern Sacramento County and southern Placer County portion of California's Great Valley Physiographic Province. The groundwater basin is part of the 400-mile-long regional Central Valley aquifer system extending from Red Bluff to Bakersfield.

Under historical natural conditions, groundwater flow underlying northern Sacramento County beneath the Study area was westward from areas of recharge in the foothills toward areas of discharge near the Sacramento River. According to DWR (*Evaluation of Ground Water Resources: Sacramento County, Bulletin 118-3, 1974*), groundwater levels were relatively stable between 1930 and 1940. Increased reliance on groundwater pumping since the 1940's have modified these conditions and groundwater levels have dropped an average of approximately 1 foot per year beneath parts of northern Sacramento County. Recent groundwater conditions (see **Figure 3-2**) are represented by fall 1998 groundwater level contours. Notable features include:

- The persistent groundwater cone of depression in the southern portion of the basin, along the Sacramento County/Placer County boundary
- The Sacramento and American Rivers acting as sources of recharge as shown by the mounding of groundwater under and adjacent to the riverbeds
- The east to west gradient resulting from recharge from the High Sierra

Historically, agricultural users in Placer County have utilized groundwater. PCWA has not used groundwater as an M&I supply due to the restrictions in the existing Placer County General Plan. Roseville has sufficient surface water supplies to meet existing demands, so groundwater has not normally been used as a water supply. Until recently, SSWD has mostly relied on groundwater to meet its customers' needs.¹⁰ Since 2000, surface water has also been used by SSWD through the Groundwater Stabilization Project. Sacramento has used both groundwater and surface water to meet demands.

It is estimated that the volume of storage space available in the northern Sacramento County area is approximately 585,000 AF (the difference between groundwater storage under natural conditions and recent groundwater conditions). If not stabilized, the groundwater overdraft could reduce the reliability of groundwater supplies through increased extraction costs, occurrences of dry wells, and threat of water quality degradation.

¹⁰ See **Appendix A** for a discussion of surface water use within SSWD's service area.

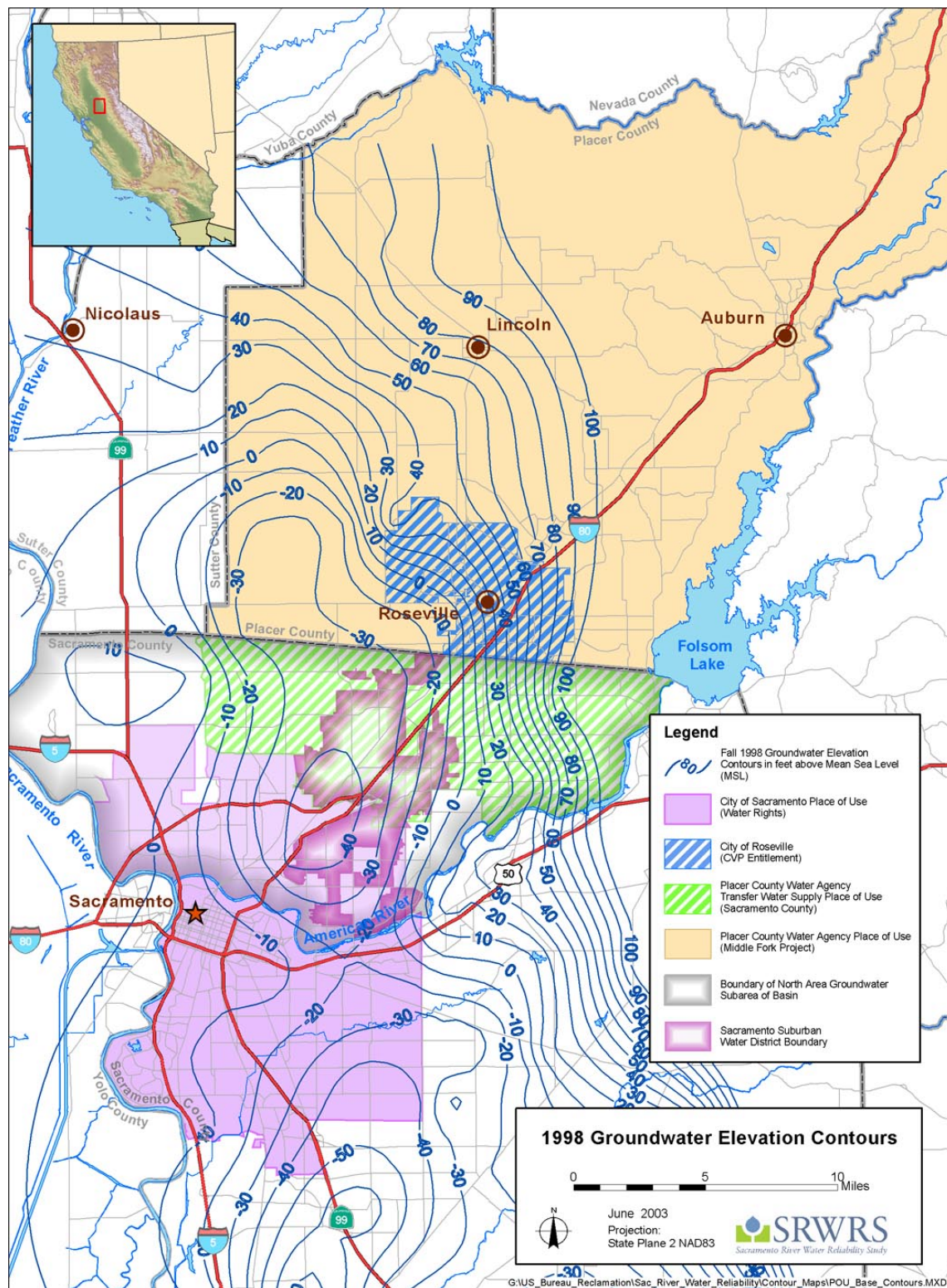


Figure 3-2. 1998 Groundwater Surface Elevations within the SRWRS Study Area

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